

# Patent Assignment Abstract of Title

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**Publication #:** NONE

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**Inventors:** Norbert Becker, Georg Biehler, Matthias Diezel, Albrecht Donner, Dieter Eckardt, Manfred Kramer, Dirk Langkafel, Ralf Leins, Ronald Lange, Karsten Schneider, Helmut Windl

**Title:** Method for the automatic retrieval of engineering data of systems

**Assignment: 1**
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**Exec Dt:** 10/02/2001

LANGKAFEL, DIRK
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**Exec Dt:** 08/29/2001

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### 1 Process and products for software reuse in Ada

77%



Sholom Cohen

**Proceedings of the conference on TRI-ADA '90** December 1990

The large scale application of reuse to support software development is not a new concept. Over twenty years ago, M. D. McIlroy expressed the need for: "... standard catalogues of routines, classified by precision, robustness, time-space performance, size limits, and binding time of parameters." [McIlroy 68] He also provided insight that is still valid into: "... the kinds of variability necessary in software components, ways of producing useful inventories, type ...

### 2 Transparent fault tolerance for distributed Ada applications

77%



Mark A. Breland , Steven A. Rogers , Guillaume P. Brat , Kenneth L. Nelson

**Proceedings of the conference on TRI-Ada '94** November 1994

The advent of open architectures and initiatives in massively parallel supercomputing, combined with the maturation of distributed processing methods and algorithms, has enabled the implementation of responsive software-based fault tolerance. Expanding capabilities of distributed Ada runtime environments further stimulate the incorporation of hardware fault tolerance into critical, realtime embedded systems. Through the integration of proven Ada program component distribution and virtually ...

### 3 Understanding fault-tolerant distributed systems

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Flavin Cristian

**Communications of the ACM** February 1991  
Volume 34 Issue 2

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1


2





- 1** The Intel design automation system 80%  
 Stephen Nachtsheim  
**21st Proceedings of the Design Automation Conference on Design automation**  
 June 1984  
 The Intel Design Automation (DA) System is overviewed within the framework of Intel's business and technological goals. The philosophies and goals that direct development, acquisition, and deployment of DA capabilities throughout Intel are provided as a foundation for a more detailed discussion of specific areas within the total DA system. The "computing hierarchy" used within Intel world-wide for design and verification of its products is presented, as well as a ...
- 2** Ada implementation of an X Window System server 80%  
 S. Lewin  
**Proceedings of the conference on Tri-Ada '89: Ada technology in context: application, development, and deployment** January 1989  
 Sanders is in the second year of a two year project to implement an X Window System server using the Ada programming language. X is a highly portable, network transparent display management system which was developed at MIT's Project Athena and has emerged as the industry standard for windowing systems. Our objectives are to implement a production-quality base windowing system suitable for use in Ada-based real-time systems, and to examine Ada's applicability as an implementation language f ...
- 3** Potpourri: Computing walsh, arithmetic, and reed-muller spectral 80%  
 decision diagrams using graph transformations  
 Whitney J. Townsend , Mitchell A. Thornton , Rolf Drechsler , D. Michael Miller  
**Proceedings of the 12th ACM Great Lakes Symposium on VLSI** April 2002  
 Spectral techniques have found many applications in computer-aided design,


including synthesis, verification, and testing. Decision diagram representations permit spectral coefficients to be calculated via graph-based algorithms. In this paper, algorithms are described for transforming multi-output functions to produce Walsh, arithmetic, and Reed-Muller spectral decision diagrams and the experimental results of those implementations are presented.


- 4** Understanding fault-tolerant distributed systems 80%

 Flavin Cristian  
**Communications of the ACM** February 1991  
 Volume 34 Issue 2
- 5** Fault-Tolerance in the Advanced Automation System 77%

 Flaviu Cristian  
**ACM SIGOPS Operating Systems Review** April 1991  
 Volume 25 Issue 2
- 6** A processor for a high-performance personal computer 77%

 Butler W. Lampson , Kenneth A. Pier  
**Proceedings of the 7th annual symposium on Computer Architecture** May 1980  
 This paper describes the design goals, micro- architecture, and implementation of the microprogrammed processor for a compact high performance personal computer. This computer supports a range of high level language environments and high bandwidth I/O devices. Besides the processor, it has a cache, a memory map, main storage, and an instruction fetch unit; these are described in other papers. The processor can be shared among 16 microcoded tasks, performing microcode context switches ...
- 7** An interactive design automation system 77%

 Stephen Y. H. Su  
**Proceedings of the tenth design automation workshop on Design automation**  
 June 1973  
 An interactive design automation system is presented which, after complete implementation, will allow the designer to check the determinacy and dead locks of the system before implementation. The design can be evaluated at various levels and modified interactively. The designer enters his design specification using either graphical representation or design language statements. The translator accepts the input and produces a data base for both the simulator and the logic synthesizer. The syn ...
- 8** Application of hardware description languages to microprogramming: 77%

 Method, practice, and limitations  
 Paul J. Drongowski , Charles W. Rose  
**Proceedings of the 12th annual workshop on Microprogramming** November 1979  
 The use of microprogrammable processors and networks of microcomputers has induced a reconsideration of development tools and methodologies for system design and construction. This article presents the history, structure, and use of a system developed at Case Western Reserve to support the development of these kinds of systems. Other applications of hardware description languages to microprogramming and system development are discussed. The paper concludes with a discussion of limitations o ...
- 9** The mimola design system: Tools for the design of digital processors 77%



Peter Marwedel

**21st Proceedings of the Design Automation Conference on Design automation**

June 1984

The MIMOLA design method is a method for the design of digital processors from a very high-level behavioral specification. A key feature of this method is the synthesis of a processor from a description of programs which are expected to be typical for the applications of that processor. Design cycles, in which the designer tries to improve automatically generated hardware structures, are supported by a retargetable microcode generator and by an utilization and performance analyzer. This pap ...

**10 The retrieval power of NFQL**

77%



Y. K. Ng , D. W. Embley

**Proceedings of the seventeenth annual ACM conference on Computer science : Computing trends in the 1990's: Computing trends in the 1990's** February 1989

Forms are common and well understood in our modern society, especially in the office. They organize and structure communication according to well established and long standing convention. The Natural Forms Query Language (NFQL) takes advantage of these features to provide a "natural" communication language between computers and humans. Various facets of NFQL have been discussed elsewhere. In this paper we explore the retrieval power of NFQL. We explain why basic NFQL forms (whic ...

**11 Session 10: dynamic response systems: Containment units: a**

77%

**hierarchically composable architecture for adaptive systems**

Jamieson M. Cobleigh , Leon J. Osterweil , Alexander Wise , Barbara Staudt Lerner

**ACM SIGSOFT Software Engineering Notes** November 2002

Volume 27 Issue 6

Software is increasingly expected to run in a variety of environments. The environments themselves are often dynamically changing when using mobile computers or embedded systems, for example. Network bandwidth, available power, or other physical conditions may change, necessitating the use of alternative algorithms within the software, and changing resource mixes to support the software. We present Containment Units as a software architecture useful for recognizing environmental changes and dyna ...

**12 Dynamic response systems: Containment units: a hierarchically**

77%

**composable architecture for adaptive systems**

Jamieson M. Cobleigh , Leon J. Osterweil , Alexander Wise , Barbara Staudt Lerner

**Proceedings of the tenth ACM SIGSOFT symposium on Foundations of software engineering** November 2002

Software is increasingly expected to run in a variety of environments. The environments themselves are often dynamically changing when using mobile computers or embedded systems, for example. Network bandwidth, available power, or other physical conditions may change, necessitating the use of alternative algorithms within the software, and changing resource mixes to support the software. We present Containment Units as a software architecture useful for recognizing environmental changes and dyna ...

**13 XML transactions: Efficient synchronization for mobile XML data**

77%



Franky Lam , Nicole Lam , Raymond Wong

**Proceedings of the eleventh international conference on Information and knowledge management** November 2002

Many handheld applications receive data from a primary database server and operate

in an intermittently connected environment these days. They maintain data consistency with data sources through synchronization. In certain applications such as sales force automation, it is highly desirable if updates on the data source can be reflected at the handheld applications immediately. This paper proposes an efficient method to synchronize XML data on multiple mobile devices. Each device retrieves and cac ...

**14** System level modeling and verification: Embedded systems verification 77%  
 with FPGA-enhanced in-circuit emulator

M. Meerwein , C. Baumgartner , T. Wieja , W. Glauert

**Proceedings of the 13th international symposium on System synthesis** September 2000

In this paper we present a novel coverification concept for embedded microcontrollers that satisfies industrial requirements. Based on a commercially available CPU in-circuit emulator coupled with FPGA boards, it verifies the correctness of an implementation in terms of function and timing within a real-world environment. Using our system, the software engineer can write, test and optimize programs for a chip that is not yet physically existent. In addition the system is used to obtain software m ...

**15** DVM: an object-oriented framework for building large distributed Ada 77%  
 systems

Christopher J. Thompson , Vincent Celier

**Proceedings of the conference on TRI-Ada '95: Ada's role in global markets: solutions for a changing complex world** November 1995

**16** Modeling layout tools to derive forward estimates of area and delay at 77%  
 the RTL level

Donald S. Gelosh , Dorothy E. Steliff

**ACM Transactions on Design Automation of Electronic Systems (TODAES)** July 2000

Volume 5 Issue 3

Forward estimates of area and delay facilitate effective decision-making when searching the solution space of digital designs. Current estimation techniques focus on modeling the layout result and fail to deliver timely or accurate estimates. This paper presents a novel approach to deriving these area and delay estimates at the RTL level by modeling the layout tool, rather than the layout result. This approach uses machine learning techniques to capture the relationships between general des ...

**17** Building a layered database for design automation

Robert V. Zara , David R. Henke

77%

**Proceedings of the 22nd ACM/IEEE conference on Design automation** June 1985

A layered approach is presented for the database of a distributed, interactive design automation system. Levels of abstraction are described from the point of view of the bottom-up designer. The controversy between the relational and network database formats is explored in the central abstraction: an object-oriented layer which attempts to select the advantages of each of these two formats while avoiding their respective disadvantages. This object-oriented approach treats each of ...

**18** A processor for a high-performance personal computer

Butler W. Lampson , Kenneth A. Pier


77%

**25 years of the international symposia on Computer architecture (selected**

**papers)** August 1998

**19** Module selection for pipelined synthesis

77%


 Rajiv Jain , Alice Parker , Nohbyung Park

**Proceedings of the 25th ACM/IEEE conference on Design automation** June 1988

Module selection is one of the many functions which have to be performed during behavioral synthesis of pipelined designs. Module selection is the process of choosing the types of modules (e.g. carry-look-ahead adder) to implement each operation (e.g. addition). In this paper, we give a limited solution to the module selection problem for pipelined designs. A model for estimating area-time tradeoffs [3] for pipelined designs is used to formulate the module selection problem, and an overview ...

**20** SmartATMS: a simulator for air traffic management systems



77%

 Tak-Kuen John Koo , Yi Ma , George J. Pappas , Claire Tomlin

**Proceedings of the 29th conference on Winter simulation** December 1997

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### 21 Process and products for software reuse in Ada



Sholom Cohen

77%

**Proceedings of the conference on TRI-ADA '90** December 1990

The large scale application of reuse to support software development is not a new concept. Over twenty years ago, M. D. McIlroy expressed the need for: "... standard catalogues of routines, classified by precision, robustness, time-space performance, size limits, and binding time of parameters." [McIlroy 68] He also provided insight that is still valid into: "... the kinds of variability necessary in software components, ways of producing useful inventories, type ...

### 22 Summary of ARTEWG workshop on distributed systems



Mike Kamrad

77%

**ACM SIGAda Ada Letters** September 1995  
Volume XV Issue 5

### 23 Transparent fault tolerance for distributed Ada applications



Mark A. Breland, Steven A. Rogers, Guillaume P. Brat, Kenneth L. Nelson

77%

**Proceedings of the conference on TRI-Ada '94** November 1994

The advent of open architectures and initiatives in massively parallel supercomputing, combined with the maturation of distributed processing methods and algorithms, has enabled the implementation of responsive software-based fault tolerance. Expanding capabilities of distributed Ada runtime environments further stimulate the incorporation of hardware fault tolerance into critical, realtime embedded systems. Through the integration of proven Ada program component distribution and virtually ...

### 24 High level synthesis of pipelined instruction set processors and back-end 77%



compilers

I.-J. Huang , A. M. Despain

**Proceedings of the 29th ACM/IEEE conference on Design automation conference**  
July 1992

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"uniform object model"



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Results 1 - 13 of 13 short listing

- 1** How to identify binary relations for domain models 88%  
 Hermann Kaindl  
**Proceedings of the 18th international conference on Software engineering** May 1996  
 Many approaches to requirements engineering include building a model of the domain. Those using entity relationship modeling or deriving from it employ the concept of relations between entities, but identifying the relations is still more of an art than science or engineering. We deal with this problem primarily in the context of object oriented analysis (OOA), where relations between object classes are to be identified. Our new approach uses natural language definitions of object classes and lo ...
- 2** An object-oriented approach to data management: why design 82%  
 databases need it  
 S. Heiler , U. Dayal , J. Orenstein , S. Radke-Sproull  
**24th ACM/IEEE conference proceedings on Design automation conference** October 1987  
 An object-oriented approach to management of engineering design data requires object persistence, object-specific rules for concurrency control and recovery, views, complex objects and derived data, and specialized treatment of operations, constraints, relationships and type descriptions. We discuss object-orientation as more than an implementation paradigm, and show how an object-oriented approach simplifies both use and implementation of engineering design systems.
- 3** Technical columns: Distributed computing research issues in grid 80%  
 computing  
 Henri Casanova  
**ACM SIGACT News** September 2002  
 Volume 33 Issue 3

Ensembles of distributed, heterogeneous resources, or *Computational Grids*, have emerged as popular platforms for deploying large-scale and resource-intensive applications. Large collaborative efforts are currently underway to provide the necessary software infrastructure. *Grid computing* raises challenging issues in many areas of computer science, and especially in the area of *distributed computing*, as Computational Grids cover increasingly large networks and span many organi ...

**4** WREN---an environment for component-based development 80%



Chris Lüer , David S. Rosenblum

**ACM SIGSOFT Software Engineering Notes , Proceedings of the 8th European software engineering conference held jointly with 9th ACM SIGSOFT international symposium on Foundations of software engineering** September 2001  
Volume 26 Issue 5

Prior research in software environments focused on three important problems---tool integration, artifact management, and process guidance. The context for that research, and hence the orientation of the resulting environments, was a traditional model of development in which an application is developed completely from scratch by a single organization. A notable characteristic of component-based development is its emphasis on integrating independently developed components produced by multiple orga ...

**5** Research directions in object-oriented database systems 80%



Won Kim

**Proceedings of the ninth ACM SIGACT-SIGMOD-SIGART symposium on Principles of database systems** April 1990

The set of object-oriented concepts found in object-oriented programming languages forms a good basis for a data model for post-relational database systems which will extend the domain of database applications beyond conventional business data processing. However, despite the high level of research and development activities during the past several years, there is no standard object-oriented data model, and criticisms and concerns about the field still remain. In this paper, I will first pr ...

**6** Special issue on persistent object systems: Orthogonally persistent object systems 77%



Malcolm Atkinson , Ronald Morrison

**The VLDB Journal — The International Journal on Very Large Data Bases** July 1995

Volume 4 Issue 3

Persistent Application Systems (PASs) are of increasing social and economic importance. They have the potential to be long-lived, concurrently accessed, and consist of large bodies of data and programs. Typical examples of PASs are CAD/CAM systems, office automation, CASE tools, software engineering environments, and patient-care support systems in hospitals. Orthogonally persistent object systems are intended to provide improved support for the design, construction, maintenance, and operation o ...






**7** Industry track papers and presentations: product lines: Integrating hundred's of products through one architecture: the industrial IT architecture 77%



Lars G. Bratthall , Robert van der Geest , Holger Hofmann , Edgar Jellum , Zbigniew Korendo , Robert Martinez , Michal Orkisz , Christian Zeidler , Johan S Andersson

**Proceedings of the 24th international conference on Software engineering** May 2002

During the last few years, software product line engineering has gained significant interest as a way for creating software products faster and cheaper. But what architecture is needed to integrate huge amounts of products, from different product lines? This paper describes such an architecture and its support processes and tools. Through cases, it is illustrated how the architecture is used to integrate new --- and old --- products in such diverse integration projects as vessel motion control, ...

- 8** Forced simulation: A technique for automating component reuse in embedded systems 77%  
 Partha S. Roop , A. Sowmya , S. Ramesh  
**ACM Transactions on Design Automation of Electronic Systems (TODAES)** October 2001  
 Volume 6 Issue 4  
 Component reuse techniques have been a recent focus of research because they are seen as the next-generation techniques to handle increasing system complexities. However, there are several unresolved issues to be addressed and prominent among them is the issue of *component matching*. As the number of reusable components in a component database grows, the task of manually matching a component to the user requirements becomes infeasible. Automating this matching can help in rapid system prot ...
- 9** Enterprise architecture for business process simulation 77%  
 Ali Bahrami , Deborah Sadowski , Soheila Bahrami  
**Proceedings of the 30th conference on Winter simulation** December 1998
- 10** Managing semantic heterogeneity in databases: a theoretical prospective 77%  
 Richard Hull  
**Proceedings of the sixteenth ACM SIGACT-SIGMOD-SIGART symposium on Principles of database systems** May 1997
- 11** SIGMOD challenges paper: database issues in telecommunications network management 77%  
 Ilsoo Ahn  
**ACM SIGMOD Record , Proceedings of the 1994 ACM SIGMOD international conference on Management of data** May 1994  
 Volume 23 Issue 2  
 Various types of computer systems are used behind the scenes in many parts of the telecommunications network to ensure its efficient and trouble-free operation. These systems are large, complex, and expensive real-time computer systems that are mission critical, and contains a database engine as a critical component. These systems share some of common database issues with conventional applications, but they also exhibit rather unique characteristics that present challenging database issues. ...
- 12** Exploiting reusable specifications through analogy 77%  
 Neil Maiden , Alistair Sutcliffe  
**Communications of the ACM** April 1992  
 Volume 35 Issue 4
- 13** Industrial strength hypermedia: requirements for a large engineering 77%



enterprise

Kathryn C. Malcolm , Steven E. Poltrock , Douglas Schuler

**Proceedings of the third annual ACM conference on Hypertext** September 1991

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- 1**  Papers: Quantifiable architecting of dependable systems of embedded systems 80%

Sheldon X. Liang , Valdis Berzins Luqi  
**ACM SIGSOFT Software Engineering Notes** November 2003  
 Volume 28 Issue 6  
 Architecture is a critical aspect in the successful development and evolution of dependable systems of embedded systems (SoES). Quantifiably architecting such systems involves establishing consensus from the particular perspectives of quality attributes. Unfortunately, there are few established approaches for rapidly prototyping architecture to identify key architectural artifacts that carry quantifiable constraints throughout the software development processes. This paper presents a quantifiabl ...
- 2**  Automatic prototype generating via optimized object model 80%

Sheldon X. Liang , Lynn Zhang , Luqi  
**ACM SIGAda Ada Letters** June 2003  
 Volume XXIII Issue 2  
 Computer-aided prototyping shows promise that one system under development frees designers from implementation details by executing specifications via reusable components. Ada is first choice for constructing such reusable object-oriented components because Ada95 is the only international standard programming language that supports object-oriented real-time distributed systems. But Ada has diversified object forms that are so intricate that people feel it difficult to find an equivalence of a cl ...
- 3**  Object-oriented technology: Using objects to distribute configuration management tasks 77%

Terry Coatta  
**Proceedings of the 1993 conference of the Centre for Advanced Studies on Collaborative research: software engineering - Volume 1** October 1993  
 Distributed programming techniques have transformed applications into federations of cooperating semi-autonomous components. Complex interactions between these

components create complex interdependencies which are quickly outstripping the capacity of human systems managers. Adding configuration management features to an application's components reduces the flexibility and portability of those components. The Raven Configuration Management System (RCMS) provides an environment in which configurat ...

**4** Kava: a Java dialect with a uniform object model for lightweight classes 77%



David F. Bacon

**Proceedings of the 2001 joint ACM-ISCOPE conference on Java Grande** June 2001

Object-oriented programming languages have always distinguished between "primitive" and "user-defined" data types, and in the case of languages like C++ and Java, the primitives are not even treated as objects, further fragmenting the programming model. The distinction is especially problematic when a particular programming community requires primitive-level support for a new data type, as for complex, intervals, fixed-pointed numbers, and so on.

We present Kav ...

**5** Supporting the evolution of class definitions 77%



Theodore C. Goldstein

**ACM SIGPLAN OOPS Messenger , Addendum to the proceedings on Object-oriented programming systems, languages, and applications (Addendum)** April 1993

Volume 5 Issue 2

**6** Objects in large distributed applications (OLDA-II) 77%



Peter Dickman

**ACM SIGPLAN OOPS Messenger , Addendum to the proceedings on Object-oriented programming systems, languages, and applications (Addendum)** December 1992

Volume 4 Issue 2

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**1** Object database support for a software project management 77%

environment

Lung-Chun Liu , Ellis Horowitz

**Proceedings of the third ACM SIGSOFT/SIGPLAN software engineering  
symposium on Practical software development environments** November 1988  
Volume 13 , 24 Issue 5 , 2

The recent development of object-oriented database models, which combine the power of object programming and the efficient management of data, provides a feasible solution for the construction of a computer-aided software engineering environment or CASE. However, an object oriented database provides only a kernel set of capabilities. This paper identifies the data management requirements related to software project management and shows how they are represented in the model called Design-Net ...

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**Results Key:**

**JNL** = Journal or Magazine   **CNF** = Conference   **STD** = Standard

**1 SIMOO-RT-an object-oriented framework for the development of real time industrial automation systems**

Becker, L.B.; Pereira, C.E.;

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## SIMOO-RT-an object-oriented framework for the development of real-time industrial automation sys

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### Abstract:

Presents SIMOO-RT, an **object**-oriented framework designed to support the development cycle of real-time industrial **automation** systems. It is based on the concept of distributed active **objects**, which are autonomous execution entities with their own thread of control, and that interact with each other by means of remote methods invocation. SIMOO-RT covers most of the development phases, from requirements **engineering** to implementation. It starts with the construction of an **object** model of the technical plant to be **automated**, on which user and problem domain requirements are captured. Here, emphasis is on modeling timing constraints. The technical details involved in the process of mapping problem-domain requirements to design specific entities as well as the automatic code generation for the **runtime** application are discussed in the paper. Furthermore, details are given on how to evaluate its timing restrictions.

### Index Terms:

distributed object management industrial control object-oriented methods real-time remote procedure calls software tools systems analysis SIMOO-RT automatic code generation autonomous execution entities design specific entities development cycle distributed objects object-oriented framework problem-domain objects real-time industrial automation systems remote methods invocation requirements engineering runtime applications tools system analysis system design timing constraints timing restrictions

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## Toward optimal assignment of human functions in defense systems via uniform object modeling and simulation

Nguyen, C.M. Kim, K.H.

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*This paper appears in: Object-Oriented Real-Time Dependable Systems, Proceedings., Third International Workshop on*

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### Abstract:

The view of a complex real-time computer-based application system as one in which only automated machine components are embedded but also human servers, those who perform time-sensitive tasks in close interaction with machine components are "embedded" as components, is adopted. Efforts for optimal scheduling of components can then be applied not only to the machine components but also to the embedded human operators, preferably in a uniform integrated fashion. The risk incursion function (RIF) introduced earlier by the authors is advocated as a method for optimal allocation of both machine and human resources. Also, an approach to a uniform representation of application environments, machine functions and components and human functions and components in the form of a uniform network of real-time objects is advocated.

### Index Terms:

[man-machine systems](#) [military computing](#) [military systems](#) [object-oriented programming](#) [time systems](#) [resource allocation](#) [risk management](#) [scheduling](#) [complex defense systems](#) [complex real-time computer-based application system](#) [embedded automated machine components](#) [embedded human operators](#) [human components](#) [human functions](#) [machine components](#) [machine functions](#) [optimal human function assignment](#) [optimal resource allocation](#) [optimal scheduling](#) [real-time simulation](#) [risk incursion function](#) [time-sensitive tasks](#) [uniform](#)

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